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Quarterly Report

Date of Report:	15 January 2007
Contract Number:	DTPH56-05-T-0003
Prepared for:	United States Department of Transportation Pipeline and Hazardous Materials Safety Administration Office of Pipeline Safety
Project Title:	"Consolidated Research and Development Program to Assess the Structural Significance of Pipeline Corrosion"
Prepared by:	Mr. Vinod Chauhan Principal Investigator Advantica, Inc. Ashby Rd. Loughborough, LE11 3GR, England vinod.chauhan@advanticagroup.com Mr. Ian Wood Team Project Manager Electricore, Inc. 27943 Smyth Drive, Suite 105 Valencia, CA 91355 ian@electricore.org Ms. Marina Smith Team Technical Coordinator Pipeline Research Council International, Inc. 1401 Wilson Blvd, Suite 1101 Arlington, VA 22209 msmith@prci.org
For quarterly period ending:	31 December 2006

Progress to Date

Additional papers available in the public domain will be reviewed to the augment the literature review conducted in phase 1 of the project.

Three dimensional linear elastic finite element model construction for 36-inch diameter (914.4 mm) x ½-inch wall thickness, *t* (12.7 mm) pipe with *D/t* ratios of 40, 72 and 100 has also been completed. In each case, the pipe is subjected to internal pressure loading and a pressure end load to represent an end force on the pipe to account for the presence of end caps. This is consistent with the FE analyses undertaken for other corrosion projects performed for PRCI an in the broader industry. Corrosion damage in the form of grooves orientated both axially and circumferentially has been modeled. Defect depths of 20%, 40%, 60% and 80% of the wall thickness have been considered.

Full scale testing has been completed on 12-inch diameter pipe (8.4 mm wall thickness) of material grade X52. Defects (type, depth, *d*, and axial length and circumferential width, *L* and *W* respectively, and blend radius, *r*) were chosen to compliment the aforementioned FE studies, and agreed with the PRCI project team. The test pipe (11.8 m length) was machined to include 4 metal loss defects to simulate corrosion:

Defect 1: groove, d/t=20%, L=400 mm, r=8.5mm (W=10.1 mm)*

Defect 2: groove, d/t=40%, L=400 mm, r=8.5mm (W=13.5 mm)*

Defect 3: groove, d/t=60%, L=400 mm, r=8.5mm (W=15.5 mm)*

Defect 4: patch, d/t=60%, L=400 mm, r=8.5mm (W=140 mm)

Notes: * W is dependent on defect depth and blend radius (r).

All four defects were machined on the external surface of the same test pipe.

An interim draft report (Advantica Report R8928) describing the results of the work has now been issued to DOT and PRCI.

Payable Milestones

The following payable milestones were completed during this reporting period:

- Fifth Quarterly Status Report Submitted